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President, without any consultation with Mr. Bond, and solely on account of the high reputation he has acquired as an Astronomer. It was, therefore, an appointment equally honourable to the President and (to the) recipient thereof."

Extract of a letter from Mr. G. P. Bond, dated November 7, 1856:—

"We are preparing, on a large scale, for renewing experiments in lunar photography.

"Before this reaches you, you will probably have received Part i. of vol. i. of our *Annals*, completing the first volume . . . The subject of Part i. vol. ii. will be mostly *Saturn*, of which we have eight years' observations of physical aspect," &c.

At the conclusion of the ordinary business of the meeting, Mr. Carrington gave a verbal account of a recent short tour of inspection into the present state of some of the German observatories; premising his statement with the remark that it would greatly tend to keep our information of what other observers are engaged in up to date if other Fellows of the Society would, after autumn travels, in like manner communicate what they had had opportunities of ascertaining. The observatories visited were those at Bonn, Bilk, Göttingen, Gotha, Leipsic, Halle, Dessau, Berlin, Hamburgh, and Altona. Mr. Carrington was requested to put his remarks into a form suitable for the *Monthly Notices;* and will, in this paper, endeavour to comply with the wish expressed.

Woodcut representations of several of the above-named observatories will be found in a little tract entitled *Deutschland's Vorzüglichste Sternwarten*, written and published by Carl von Littrow, as an appendix to his Calendar for the year 1848, and sold separately. A copy was presented, and laid on the table.

At Bonn, Dr. Argelander, and his assistants, Drs. Schoenfeld and Kreuger, are now principally engaged upon a large series of zone observations of stars for basis-points of an extensive system of charting. The whole northern hemisphere has been divided into zones of two degrees width by one hour in length, to be gone over twice, the zones of the second series overlapping those of the first by one degree. The positions are being observed with a small equatoreal of less than three inches aperture, with a species of comb *painted* on a plate of glass in the focus; and the work is much of the quality of the Markree observations made with a similar object. Of about 2000 zones required, 1300 are completed, and a trial-chart (scale double the Berlin) lithographed. The Professor confines his own attention more particularly to the continuation of his researches connected with variable stars, and to the measurement of double stars, with a very fine heliometer mounted in the principal central tower.

The observatory at Bilk was built in 1844, by a Dr. Benzenberg for his own use, and was at his death, about two years after, bequeathed to the town of Düsseldorf. Dr. Brünnow, now of Michigan, was stationed here for about three years, and on his return to Berlin at the end of the year 1851, was succeeded by the present Director, Dr. Luther. Dr. Luther is engaged in the observation and discovery of minor planets, preparing for publication one of the remaining charts of the Berlin Academy, filling in and extending Argelander's southern zones, and computing ephemerides. He possesses a very fine comet-seeker of five French inches aperture, provided with the so-called autoscopic eye-pieces, constructed by Kellner of Wetzlar, near Frankfort. These eye-pieces consist of three lenses, the first a large double convex lens placed before the focus, and the other two small, united with Canada balsam, and forming an object-glass combination. With a power of 15, the observer has a good field of four degrees. Kellner himself is now dead, and his widow carries on his business.

Books or communications of any size are most conveniently and rapidly received by Dr. Luther, if addressed in the first instance to Dr. Argelander; and the best mode of transmission to Bonn is through Mr. Otto Marcus, bookseller, of 8 Oxford Street, London, whose father is one of the principal booksellers in Bonn.

At Göttingen, Dr. Klinkerfues continues to be the resident astronomer; Professor Dirichlet, the geometer, having succeeded Gauss as director. One of the instruments here has now principally a historical interest,—the quadrant of Tobias Mayer. The chief instrument in use is a Reichenbach meridian-circle, employed on a partial revision of Piazzi's Catalogue; the instrument most used, perhaps, being the comet-seeker with which Dr. Klinkerfues has already discovered five comets.

The channel of transmission to Göttingen is through a London foreign bookseller to the firm of Dietrich.

One principal object in the writer's visit to Göttingen was to obtain a sight of the MSS. in which are contained Dr. S. T. Sœmmering's observations of the solar spots; but, after a search, in which he was much assisted by Mr. Wagner and Professor Listing, he found that he was under a wrong impression, and succeeded in tracing them to the Senkenberg institution at Frankfort.

At Gotha, a new observatory in the south suburbs of the town is in progress of erection, which is designed to take the place of the former one on the Seeberg hill, about a mile to the south-east. The Seeberg Observatory has been pulled down, and its materials have been used in the construction of the new one. The instruments are meanwhile placed in a small building attached to the dwelling-house of Professor Hansen, where Mr. Carrington was permitted to examine a modification of the method of circle-reading and provision for the determination of division-errors proposed by Professor Hansen in Nos. 388 and 389 of the *Astronomische Nachrichten*. Present

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space does not permit the insertion here of a description of the arrangement adopted, but readers of German will find it repay them to refer to the article named, and will, perhaps, be the more induced to attend to the recommendation on being informed that Professor Peters has recently substituted this arrangement for that which was before in use at Altona, and that a transit-circle for Albany, now in the hands of Pistor and Martins, is likewise being so fitted. The lunar tables on which the Professor has been so long engaged had very recently been finished and forwarded to England for publication.

In another part of the town of Gotha was a private observatory belonging to Professor Habicht, provided with the usual transit and equatoreal; and, in addition, with one of Repsold's universal instruments. These small instruments are capable of doing very delicate work in skilful hands, are moderate in cost (40*l.* to 60*l.*), and from their adaptability to a variety of purposes, are, perhaps, better suited than any others for the introduction of students to the first leading processes of practical astronomy.

The observatory at Leipsic is probably the most singularly situated of any now existing. In the south-west angle of the fortifications of the city there is an extensive barrack, from which rises a cylindrical tower, of more than 150 feet in height, of about 40 feet interior diameter, and with walls of 10 feet in thickness, termed the Tower of the Schloss Pleissenburg. At a height of some 120 feet, the tower contracts on the outside, leaving a railed balcony of about 5 feet in width, and from thence rises in the form of a dome, surmounted by a lantern. At the level of the balcony, narrow sheds have been built on to the side of the tower for a transit and other instruments; and the telescope with which Professor D'Arrest has made his observations of nebulæ and comets, is mounted on a tripod, which is run out on wheels to any part of the balcony required, the ring-micrometer being of necessity used in all cases. Professor D'Arrest stated, that a removal was contemplated to a more suitable and less elevated situation in the outskirts of the city. A notice of some of the recent labours of Professor D'Arrest will be found elsewhere in the present number.

At Halle there is a small observatory situated in the Botanical Garden, consisting of an octagonal tower of three stories, provided with balconies, and, adjoining it, on the ground-floor, is a moderate-sized meridian-room. The transit-circle was at the maker's, undergoing repairs. The instrument for more general use is a Fraunhofer telescope of 52 lines ($4\frac{1}{2}$ inches) aperture, on a tripod stand; but for this Professor Rosenberger remarked that the building afforded no sufficiently firm support.

At Dessau, Mr. Carrington paid a visit to the Hofrath Schwabe, whose house is situated in the St. Johannis-Strasse. The observatory, for so it may be rightly termed, consists of a small attic, some 12 feet by 10, with four small windows overlooking the roofs of adjoining houses. From this little room a Fraunhofer

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telescope, equatoreally mounted at one of the south windows, has, for thirty-one years, been almost daily directed to the sun, and by its means the spots observed on its surface have been recorded regularly in a series of quarto volumes, with appended diagrams, which now form a considerable collection, and one which excites no little interest in the beholder from the singleness of aim, continuity of purpose, and success with which their author has laboured upon them. Mr. Schwabe is now sixty-seven years of age, and still continues his accustomed occupation.

A full description of the Observatory at Berlin, with plans, is given in the first volume of Professor Encke's *Observations.* The writer was principally struck with the large refractor, mounted in Fraunhofer's manner, and with the perfection of the shutter-machinery in the meridian-room. Professor Encke is assisted at the present time by Dr. Forster and Mr. Carl Bruhns, who find the observation of the minor planets and comets with the great refractor as much as their united force can profitably be extended to.

At Hamburgh, a new equatoreal tower of considerable dimensions is nearly completed. It stands in the rear of the dwelling-house, and detached from it. The interior diameter of the dome, which is of metal, is 20 feet clear. The instrument is not yet constructed, but it is intrusted to Mr. Repsold, and intended to exceed 9 inches in aperture. When mounted, it will be the principal instrument of the Observatory. At present, Mr. George Rümker is engaged in observing the minor planets with the equatoreal so long used by his father; who, since his severe accident, has been unable to take any further active part in the work of the Observatory.

At Altona, Professor Peters has been introducing the use of Hansen's auxiliary sectors and moveable microscope-frame in the reading of the transit-circle, raising the equatoreal tower to obtain a better horizon, and building a set of rooms adjoining his own house for the residence of his assistant, M. Pape. In other respects the Observatory and grounds presented nearly the same appearance which they did during a former visit, in the year 1851, to the late Professor Petersen. Professor Peters was intending to apply the meridian-instrument, in the next place, to the determination of the positions of a limited number of circumpolar stars. Astronomers know what to expect in that case from this consummate manipulator and analyst.

Book-parcels may generally be forwarded directly to Gotha through a foreign bookseller; otherwise, for Gotha, Leipsic, and Halle, the Weidmannsche Buchhandlung at Leipsic is the best centre of delivery.

Similar parcels for Hamburgh and Altona are best sent by the same channel to Messrs. Perthes, Besser, and Mauke of Hamburgh, with whom both Observatories have dealings.

All requisite information concerning letter postage for the above, and probably all other Observatories, may now be found

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in sections 7 and 9 of the *British Postal Guide*, lately published by the authority of the Postmaster-General.

Mr. Carrington has, in the foregoing sketch, abstained from all allusion in passing to an inspection of the large Bürger-schule of Leipsic, which he was most kindly allowed to make by their present learned Director, Dr. C. Vogel, the father of Dr. Edward Vogel, now travelling in Africa; to a visit of a like nature to Mr. Repsold's factory in Hamburgh; as well as to an interview with the Baron von Humboldt, which he had the high honour and gratification to be favoured with at Potsdam. He fears, on reviewing what he has written, that, in the attempt at extreme condensation, much matter of interest has necessarily been boiled away; but he trusts that readers of the paper will allow that it is simply impossible to give an adequate description of nearly a dozen different establishments in the compass prescribed.

Much information of a like nature, concerning the present American Observatories, with the advantage of woodcut illustrations, will be found in the *third* edition (recently published) of Professor Loomis's *Recent Progress of Astronomy, especially in the United States.*

The attention of the Fellows is called to a small octavo volume of 110 pages, by Mr. J. F. Julius Schmidt, entitled *Das Zodiacallicht.* In this work Mr. Schmidt gives numerous observations of estimated right ascensions and declinations of points in the north and south bounding lines of the cone of light, as seen by him at different times during the years 1843 to 1855. The first section contains a notice of the labours of his predecessors in the subject. The second contains the observations and accompanying remarks, arranged chronologically. The third contains the equivalents of the preceding observations, converted into latitude and longitude, for intervals of 10° or 20° longitude, after removing surface discordances by a process of curving and interpolation. In this section the data are arranged in the order of months and days, without regard to the year. Mr. Schmidt then proceeds to a discussion of his results, assembling them first for that purpose into eight groups, with a mean date. He finds a variation in the inclination of the axis of the cone of light to the ecliptic, from 4° 18′ at the end of December to zero towards the end of March; a similar variation in the greatest elongation from the sun, from 120° in January to 70° in April; and a further similar variation in the breadth at corresponding elongations: the totality indicating a minimum for all three at about the 30th of March. By continuing backwards to the longitude of the sun the north and south bounding lines of each day's observation, he finds a mean breadth at that part of about 50 times the sun's diameter. The fourth and last section is devoted to an inquiry into the possible connexion of the phenomenon with the resisting medium round